

Title : Evaluation of Clinical Effect of Ankle Arthrodesis and Total Ankle Arthroplasty for End-stage Ankle Arthritis

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Objective: Arthrodesis as well as total ankle arthroplasty has been recently reported as an effective therapy for end-stage ankle arthritis. In this paper, we expand both surgical technique and retrospectively review our experience with evaluation of clinical effect of arthrodesis and total replacement for end-stage ankle arthritis.

Methods: 14 patients after arthrodesis (A group) and 16 patients after total ankle arthroplasty (B group) for endstage osteoarthritis of the ankle joint were followed clinically and radiologically 5 years (range: 2.1-8.6) after surgery. To evaluate the outcome, a clinical scoring system (AOFAS, Kellgren and Lawrence) and by gait analysis (Vicon 612 System) were used.

Results: The pre- and post-operative mean AOFAS score was 38.5 ± 2.3 and 74.3 ± 2.1 points in A group. The mean score was 38.1 ± 2.4 and 80.3 ± 2.2 points in B group, with statistical significance. Spatio-temporal parameters obtained with gait analysis showed a progressive recovery to normality. In A group, mean stride length normalized (%high) was 60.5 pre-op and exactly 70.5 both at 6 and 12 months; speed rose from 80.4 cm/s to 96.8 cm/s at 6 months and 99.1 cm/s at 12 months, In B group, mean stride length normalized (%high) was 62.6 pre-op and exactly 74.3 both at 6 and 12 months; speed rose from 81.5 cm/s to 97.9 cm/s at 6 months and 100 cm/s at 12 months. Both with statistical significance six patients in B group and three patients in A group showed radiological evidence of degeneration of the talonavicular joint and the subtalar joint. We noted only one case with degeneration of the calcaneocuboid joint in B group.

Conclusion: Our study revealed arthrodesis as well as total ankle arthroplasty have been recently reported as an effective surgical technique for end-stage ankle arthritis.

Introduction-

Decision making regarding arthrodesis versus total ankle arthroplasty plays an important role for the successful treatment of end-stage ankle arthritis. Every patient's individual combination of criteria has to be assessed and balanced thoroughly before surgery. The author's personal major and minor criteria for decision making between arthrodesis versus total ankle arthroplasty are listed in study. Major criteria have shown evidence in the literature and are considered of equal value without a ranking among each other. When still in doubt after balancing the major criteria, minor criteria should be analyzed. Although they seem reasonable, solid evidence for the minor criteria from studies comparing the impact of these criteria on the outcome is lacking in the literature. Balancing the criteria for decision making is not always easy and clear. In our study, for older and less demanding end-stage ankle arthritis patients, a total ankle arthroplasty is recommended. Whereas younger with a high activity level, no adjacent joint arthritis, and posttraumatic end-stage ankle arthritis, an arthrodesis is recommended .

In a recent comparative study analyzing the impact of complications on arthrodesis and total ankle arthroplasty outcome, patients with total ankle arthroplasty were as satisfied and yielded scores as good as did the patients with arthrodesis despite having significantly more complications at a mean follow-up of 38 months. This finding was thought to be associated with a better postoperative function

and a selection bias. If any ankle range of motion is retained, the patient's gait after total ankle arthroplasty is less disturbed. In our study, In A group, mean stride length normalized (%high) was 60.5 pre-op and exactly 70.5 both at 6 and 12 months; speed rose from 80.4 cm/s to 96.8 cm/s at 6 months and 99.1 cm/s at 12 months, In B group, mean stride length normalized (%high) was 62.6 pre-op and exactly 74.3 both at 6 and 12 months; speed rose from 81.5 cm/s to 97.9 cm/s at 6 months and 100 cm/s at 12 months. The patient's gait is significant improvement. We found a statistically significant increase of patients who were active in sports. The AOFAS score improved from 38.5 points preoperatively to 74 points postoperatively in group A, from 38.5 points preoperatively to 76 points postoperatively in group B. The AOFAS score also improved from 38.1 points to 80 points. This represents a higher value than preoperatively function, which indicates an improvement of their activity level.